How to Prepare for Technical Interviews

Today

- Choosing Companies
- Resumes
- Before the Interview
- During the Interview
- Mock Interviews
- After the Interview

Choosing Companies

Questions to Ask Yourself

- What are you looking for out of an internship / full-time role?
- Would you be excited to work with this team every day?
- Do your values align with the company’s values?
- Does the company size fit with what you’re looking for?

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	Small (0-50)	Medium (50-500)	Large (500+)
Your role	Many roles	Generalist	Specialist
Autonomy	Do what needs to be done	High level mandate	Clear direction
Product influence	Eng/pm hybrids	Involved in planning	Receive plans
Agency	Choose (or start) your team	Choose among some teams	Assigned a team
Access to information	Everything is discussed openly	Lots of information available	Information carefully controlled
Mentorship	Ad-hoc	Mentors, buddies, bootcamps	“XYZ University”
Financial return	Low salary + very high potential upside	Reasonable salary + high potential upside	Very high salary + low potential upside

Resumes

Not that important

30 seconds

10 Resume Rules

1. One page, no exceptions
2. Make it easy to skim
3. Make contact info obvious
4. Highlight specific accomplishments
5. Include interesting personal projects

10 Resume Rules

6. No charts or ratings
7. No objective
8. Use a professional email
9. Include relevant links: LinkedIn, GitHub, portfolio
10. Don’t sweat aesthetics

Emily Saavedra

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Profile

Highly accurate and experienced Data Scientist adept at collecting, analyzing, and interpreting large datasets, developing new forecasting models, and performing data management tasks.
Possessing an extensive analytical skills, strong attention to detail, and a significant ability to work in team environments, Emily is presently looking for a Data Scientist position with a forward-moving company.

Work experience

09/2017 – 02/2019
LONDON, UNITED KINGDOM
SpyBiotech, Inc.
Data Scientist

- Assisted in scientific research on DNA cloning and analyzed the results.
- Collected, studied, and interpreted large datasets; conducted reports; performed accurate, successful data management.
- Developed and implemented new forecasting models which increased company productivity and efficiency.
- Participated in monthly meetings with executives, provided information on the progress.

07/2016 – 09/2017
LONDON, UNITED KINGDOM
Data Scientist
CGL, Inc.

- Collected, analyzed, and interpreted raw data from various websites.
- Collaborated with the Operations and Technology Department on the development of new automated data management/analysis software which increased the overall productivity and cut unnecessary costs.
- Maintained and managed company's MS SQL server.
- Increased the accuracy of forecasting software from 80% to 95%.

Education

09/2012 – 05/2016
CHICHESTER, UNITED KINGDOM
Mathematics and Statistics
University of Chichester
First Class Honours
Clubs and Societies: Business Club, Golf Club, Riding Club

09/2010 – 05/2012 EL PARAISO, SPAIN
IB Diploma Programme
The International School Estepona
Graduated with Distinction (Grade 1 - A/excellent equivalent in all 6 subjects)

Skills

LANGUAGES

Spanish	**Native**
English	**Full**
French	**Limited**

COMPUTER/DATA ANALYTICS SKILLS

Microsoft Office	
MS SQL Server	
Sisense, Zoho Analytics	
GoodData, Qlik Sense	

INTERPERSONAL SKILLS

Accuracy	
Analytical Skills	
Detail Orientation	
Good Team Player	
Multitasking	

Volunteering

06/2014 – 08/2014 SUVA, FIJI
English Tutor
Go Overseas

Certificates

10/2016
Professional Certificate in Data Analysis
The Chartered Institute for IT

JAMES M. DONOVAN

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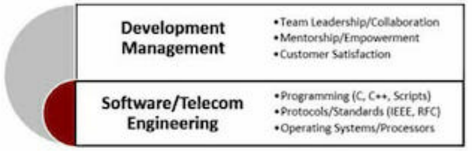
SENIOR SOFTWARE ENGINEERING MANAGER

Merging visionary leadership and technical software engineering expertise

Technical Leadership | Telecom Management | Team Empowerment | Full-System Product Development

Solutions-based technology leader focused on development of top-tier technologies and complex products for software and telecommunications companies. Influential development manager who resolves engineering challenges, empowers global team members, and increases customer satisfaction. Software architect with over 20 years' experience managing and developing new products with stringent quality performance. Earned MBA and BSEE. US Navy veteran.



CORE EXPERTISE

Engineering Management ▪ Team Development/Coaching ▪ Vendor Relations ▪ Quality Control ▪ Cost Control ▪ Best Practices
Process Improvement ▪ Product Strategy/Integration ▪ Engineering Methods ▪ Client Relationship Management
Capital/Operating Budgets ▪ Global Project Management

PROFESSIONAL EXPERIENCE

Senior Software Engineering Manager – SOME COMPANY, Orlando, FL 2014–Present

Direct and execute development for hardware and software used in Some's next-generation session border controllers (SBC), specifically Cavium-based network processing units (NPU). Manage team of local/remote direct engineers and supervise tasks for multiple dotted-line internal engineers. Collaborate with 3rd party vendor. Implement project scheduling, resource allocation, and progress tracking. Lead daily scrum meetings and report weekly project status, risk factors, and mitigations to upper management. Create fiscal budgets for equipment procurement and vendor purchases. Direct Reports: 8 engineers (local/India)

- Decreased customer data path issues from daily occurrences to zero within 12 months by implementing embedded test infrastructure to catch difficult defects, significantly improved quality control, and increased customer satisfaction.
- Stabilized Cavium team that experienced 60% attrition, retaining three employees and hiring five additional team members with diverse skill mix. Worked directly with each individual to discover strengths and areas for improvement. Challenged, motivated, and empowered direct reports to become solid team performers.
- Managed Cavium vendor relations by troubleshooting hardware and software quality issues to meet project deadlines.
- Proactively mastered legacy architecture and tasked development team to maintain sustaining engineering/legacy responsibilities while handling internal/external customer defects, conducting team code reviews, and managing new development by constantly assessing priorities and aligning resources to business unit goals.
- Collaborated with marketing and engineering teams to define new features and product requirements. Directed engineering teams toward defined requirements while managing delivery schedules and resources.
- Exhibited technical expertise and conflict management skills to mitigate/resolve quality issues before reaching crisis mode.

Lead Software Engineer – ANOTHER COMPANY, Miami, FL 2011–2014

Directed new development and sustaining engineering work for VMware projects, fibre channel (FC), and fibre channel over Ethernet (FCoE) kernel-level driver products. Hired, trained, mentored and motivated engineers to complete deliverables. Worked closely with cross-functional engineering teams, program management, and VMware engineers. Reported project status to upper management. Direct Reports: 6 engineers

- Created software quality control process by leading engineering team to define infrastructure and implement daily validation testing of code during development and delivery into source control repository Subversion (SVN).
- Expedited triage of software regression, correcting issues within 24 hours of delivery as opposed to weeks or months later.
- Developed VMware ESX 5.5 driver for next operating-system release by rewriting multiple components of Emulex driver. Applied in-depth knowledge of support dumps, legacy issues, and configuration elements to mitigate and correct concerns.
- Led special projects to develop and maintain nightly regression test harness for VMware driver team. Generated scripts to collect logs and email HTML output to developers for code verification.

Before the Interview

What to Expect

Timing

- Interview early
- Plan interviewing into your schedule
- Look for opportunities geared at your experience

Process

- Online coding challenge
- Take home
- Technical phone screen
- Onsite

Types of Interviews

- Algorithms & Coding
- Systems Design
- Practical
- Deep Dive
- Values

Expectations of You

- Think through a problem
- Write functional code
- Fix issues
- Reason about runtime
- Communicate clearly

Preparing for Interviews

Types of Interviews

- **Algorithms & Coding**
- Systems Design
- Practical
- Deep Dive
- Values

Start with the Basics

- Practice decreases stress
- Choose a language
- Learn syntax, builtins, errors

Start with the Basics

- Know how to:
  - Create a function
  - Define a class
  - Work with strings
  - Work with lists
  - Work with trees

Start with the Basics

- Interview problems rarely have complex complexity:
  - Constant
  - Logarithmic
  - Linear
  - Polynomial
  - Exponential

Build your Toolbox

- Many problems reduce to a few core concepts:
  - Recursion, Divide-and-Conquer
  - Graph Searches
  - Greedy Algorithms
  - Strings
  - Searching & Sorting
  - Dynamic Programming

Build your Toolbox

- Tools you have at your disposal:
  - Arrays, linked lists
  - Hash tables
  - Binary search
  - Shortest-path algorithms
  - Memoization

Simulate the Environment

- Use a pen and paper
- Time yourself, no cheating
- Look for patterns
- Practice with friends

During the Interview

Process, not output

The Icebreaker

- Take a deep breath
- Have an intro prepared
- Be ready to talk about a project
- Don’t ramble

Approaching Technical Problems

- Don’t panic!
- Tell your interviewer if you’ve seen the problem
- Ask clarifying questions

Approaching Technical Problems

- Always think out loud
- Talk through multiple possible approaches
- If helpful, draw a diagram

Approaching Technical Problems

- Try to pattern-match against what you know
  - Can we formulate this as a graph?
  - Can we formulate this recursively?
  - Can we use a binary search?
  - Can we decompose and memoize sub-problems?

Approaching Technical Problems

- Think general before specific
- If your solution seems too complicated, it probably is
- Ask for help if you’re really stuck
- Explain a solution before coding

Process, not output

Strategy

- Constantly communicate
- Get *something* working
- Then, simplify and optimize
- Listen to your interviewer

Writing Code

- Create a function that returns the answer
- Decompose into functions as needed
- Use readable variable names
- Factor out common logic

Process, not output

Testing Code without Running

- Be the computer
- Verbally reason about your code
- Look for bugs

Testing Code with Running

- Write test cases
- Don’t just guess-and-check
- Print/debug relevant state to fix issues

Process, not output

Types of Interviews

- Algorithms & Coding
- **Systems Design**
- Practical
- Deep Dive
- Values

Systems Design

- Know your building blocks:
  - Databases?
  - Caching?
  - Message queues?
  - Services?
  - Online/offline?

Systems Design

- Piece together the building blocks
- Create visuals
- Think through scalability requirements

Types of Interviews

- Algorithms & Coding
- Systems Design
- **Practical**
- Deep Dive
- Values

Practical

- If given a codebase:
  - Search for concepts
  - Use stack traces, breakpoints, and exceptions
- If not:
  - Focus on code quality
  - What would you actually push to production?

Types of Interviews

- Algorithms & Coding
- Systems Design
- Practical
- **Deep Dive**
- Values

Deep Dive

- Present an interesting past project
- Know the details in and out
- Discuss tradeoffs & thought process
- Highlight challenges

Types of Interviews

- Algorithms & Coding
- Systems Design
- Practical
- Deep Dive
- **Values**

Values

- Looking back
  - What did you learn?
  - What are you proud of?
- Looking forward
  - What are your 6–12 month goals?
  - What are your 3–5 year goals?

Mock Interview 1

Prompt

Let’s define a rotated array as a sorted array where the numbers have all been rotated to the right some number of places, with numbers wrapping around when they reach the end of the list.

[1, 2, 3, 4, 5] rotated 3 times is [3, 4, 5, 1, 2]

Given a rotated array, find the number of times it was rotated.

Mock Interview 2

Prompt

Given a string s, find the length of the longest substring without repeating characters.

In the string “abcabcbb”, the longest substring without repeating characters is “abc”, so the length is 3.

After the Interview

The Reverse Interview

- Have questions ready in advance
  - “What does your typical day-to-day look like?”
  - “Tell me about your team’s culture.”
  - “What would you change about your team’s dev process?”
  - “What’s something you were proud of shipping recently?”
  - “What has your path at this company looked like?”

Don’t Worry

- Interviews are high-variance
- Everyone bombs sometimes
- They are not fun
- Each interview is an opportunity to get better

Takeaways

Takeaways

- Have the basics down
- Build your toolbox
- Do lots of realistic practice problems
- Communicate a solution before writing code
- Verbally run your code and look for issues

Process, not output

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